Remarks/Arguments

Rejection of Claims 1-19 under 35 U.S.C. §103(a)

The Examiner rejected Claims 1-19 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,271,369 (*Melendrez*) in view of U.S. Patent No. 5,063,368 (*Ettehadieh*). Applicant respectfully traverses the rejection inasmuch as the rejection may apply to the claims as amended.

"There are three requirements to establish a *prima facie* case of obviousness: there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; there must be a reasonable expectation of success; and, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure." *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1483 (Fed. Cir. 1991)."

To establish a *prima facie* case of obviousness under Section 103, the references, alone or in combination, must teach all the elements of rejected claims. Furthermore, there must be a suggestion or motivation to combine or modify the cited references. The cited references fail to teach or suggest all of the elements of the rejected Claims 1-19 and there is no suggestion or motivation to combine the cited patents, thus Claims 1-19 are non-obvious.

Claim 1

The combination of *Ettehadieh* and *Melendrez* fails to teach, suggest or motivate the placement of a **ferrous** metal plate on the upper side of a magnet

Claim 1 has been amended to recite a "magnet longitudinally disposed adjacent a fuel line; and operatively arranged to focus a magnetic field toward said fuel line; at least one ferrous metal plate disposed on an upper side of said magnet; and, a means for securing said magnet and said ferrous metal plate to said fuel line."

The rejection indicates that all the elements recited in Claim 1 are shown in *Melendrez* except the metal plate disposed on the upper side of the magnet, but that the metal plate on the

upper side of the magnet was taught by *Ettehadieh*. The Office Action of December 19, 2005 indicates that *Melendrez* fails to teach the placement of a metallic plate on the upper side of a magnet, thus *Ettehadieh* must teach that element in order to establish a *prima facie* case of obviousness. Applicants respectfully submit that neither *Ettehadieh* nor *Melendrez* teach or suggest the placement of a ferrous metal plate on the upper side of a magnet.

The plates shown and disclosed in *Ettehadieh* are described as a magnetic plate **116** or plate **16**. Plate **16** is described as non-magnetic and constructed of aluminum. A plate constructed of aluminum is not analogous to a plate constructed of a ferrous metal. It is submitted by the Examiner that Figure 6, which is labeled as prior art in *Ettehadieh*, is an indication that it is old in the art to provide a metal plate on the upper surface of a magnet, but Applicant respectfully submits that *Ettehadieh* only shows that it is old in the art to use a magnetic plate or aluminum plate on the upper side of four separate magnets arranged in a double stack configuration. Applicant asserts that nothing in *Ettehadieh* or *Melendrez* teaches, suggests or motivates the placement of a ferrous metal plate on the upper surface of a magnet.

Ettehadieh teaches a plate made of aluminum in col. 3, lines 25-30, and a magnetic plate in col. 4, lines 11-15, i.e., that is made of a magnetic substance, but ***Ettehadieh* fails to teach a ferrous metal plate that is non-magnetic**. Plate **116** in Figure 6 is a magnetic plate, which is entirely different than the ferrous metal plate recited in Claim 1. The ferrous plate recited in Claim 1 of the instant application is non-magnetic. **Claim 1 specifically recites a ferrous metal plate, not a magnetic plate.** The plate recited in Claim 1 that is disposed on top of the magnet in Claim 1 is significant since a ferrous metallic plate, which is non-magnetic, will have the ability to focus the magnetic flux on the fuel line more intensely than a magnetic plate would be capable of achieving. A magnetic plate will merely provide another layer of magnetic material that may intensify the magnetic flux slightly, but no where at the level that a ferrous metallic plate could achieve. In the device recited in Claim 1, the magnetic flux lines are also altered in such a way that no magnetic flux emanates beyond the metallic plate. A drawing showing the magnetic flux lines of the arrangement recited in Claim 1 (attached in Appendix C) can be compared with the arrangements shown in *Ettehadieh*. In these drawings it is clearly demonstrated the tremendous

advantage that is achieved by the using a ferrous metallic plate as opposed to a magnetic plate or an aluminum plate. Figure 6 of *Ettehadieh* shows that a significant amount of magnetic flux is transmitted past magnetic plate **116**, because the plate can not deflect the magnetic flux as a ferrous metallic plate can. With a ferrous metallic plate, the magnetic flux can be influenced tremendously, which improves the effectiveness of the fuel conditioning device recited in Claim 1 over the type described in *Melendrez* and *Ettehadieh*. The improvement in the effectiveness of the fuel conditioning device is due to the ferrous metallic plate focusing the magnetic flux more intensely on the fuel line than previously possible. (see Appendix C). The improved focusing of the gauss strength and effectiveness of the fuel conditioning device recited in Claim 1 is a marked improvement over the devices shown in *Ettehadieh* and *Melendrez*.

Additionally, since magnetic flux is not permitted to flow past the metallic plate, but is instead forced out the sides of the magnet, the magnetizing effect that normally occurs when a magnetic fuel conditioning device is installed on a vehicle is eliminated by the arrangement recited in Claim 1. The prior art device shown in Figure 6 in *Ettehadieh* can not prevent a vehicle from being magnetized by a fuel conditioning device, rather, smaller magnets are needed to eliminate the magnetizing side effect of the device. (See col. 4, lines14-33, Figure 6-8). These smaller magnets are not needed in the device recited in Claim 1 because the ferrous metal plate deflects magnetic gauss without assistance of additional smaller magnets.

The Examiner has also compared plate **216** to the plate recited in Claim 1. However, in col. 4, lines 38-42, plate **216** is again described as a magnetic plate, **not a ferrous metallic plate** as recited in Claim 1. Later in the written description of *Ettehadieh*, plate **216** is also described as being identical to plate **16** in the embodiment shown in Figure 3 and 7 (See col. 4, lines 46-48), and as it was noted *supra*, the plates in other embodiments disclosed in *Ettehadieh* are aluminum and thus can not be considered analogous to the ferrous metallic plate recited in Claim 1. The description of plate **216** as magnetic in one passage of *Ettehadieh* and composed of aluminum in another passage demonstrates that the ferrous metal plate recited in Claim 1 is not taught or suggested by *Ettehadieh*, and that the '368 patent is not an enabling disclosure for what it attests

to teach. *Ettehadieh* fails to teach or suggest the use of a ferrous metallic plate on the upper side of a magnet.

In view of the arguments above it is evident that *Ettehadieh* only discloses a four magnet configuration that uses a magnetic or aluminum plate on the upper side of all four magnets. Since a magnetic or aluminum plate is significantly different than a ferrous metallic plate, this element of Claim 1 has not been taught by *Ettehadieh*. Therefore, since the Examiner has indicated that *Melendrez* fails to show a metal plate on the upper side of a magnet and it has been shown that *Ettehadieh* fails to teach the placement of a ferrous metallic plate on the upper surface of a magnet, that element of Claim 1 has not been taught or suggested by the combination of *Melendrez* and *Ettehadieh*.

Assuming *arguendo* that a magnetic or aluminum plate was analogous to a ferrous metallic plate, which it is not, *Ettehadieh* only teaches that it was known to use plate **116** in association with four magnets in two stacks aligned side by side. Claim 1 does not recite such a configuration and asserts that the magnetic flux that would be generated, if this arrangement was even possible, would be entirely different than the magnet arrangement that is recited in Claim 1.

Ettehadieh is inoperable

There is an overarching problem with the arrangement of magnets **14** in *Ettehadieh*, and it is that like polarities are shown in direct contact with each other, which is completely contrary to well-established practice in the field of magnets and magnetism. To illustrate this point, Applicant has attached Appendix A, which is a sketch of magnets **14** in Figures 6, 7 and 8 of *Ettehadieh*. In Appendix A, the respective poles have been clearly designated to facilitate this discussion. For example, col. 3, lines 50-54 of *Ettehadieh* states that the south poles of magnets **14** are facing the fuel line. Looking at magnets **14A-14D** in Appendix A, respective north and south poles for magnets **14A** and **14B** and **14C** and **14D**, respectively are in direct contact. It is well known that like magnetic poles repel each other, as shown on page 3 of Appendix B (an excerpt from **www.school-for-champions.com**). Therefore, there will be a relatively large force pushing the magnets apart. Hence, the composite structure of *Ettehadieh* is completely unstable and cannot maintain the configuration shown in Figures 6, 7 and 8 without the application of

large outside forces and restraining mechanisms. Applicant contends that there is no practical method available for restraining the force exerted by the four magnets in *Ettehadieh* that would be sufficient to hold the four magnets in the arrangement shown in *Ettehadieh.*

To overcome the forces of repulsion, *Ettehadieh* would need to apply a very large amount of force to push the magnets together and would then require a very strong structure, restraining the magnets in all directions, to maintain the magnets in such an extremely unstable arrangement. Assuming *arguendo* that *Ettehadieh* did teach this force and structure, this arrangement of four mutually repulsing magnets, initially pushed together by outside force, and maintained in an inherently unstable configuration by additional restraining means is clearly not analogous to a the structure recited in Claim 1. Thus, the devices shown in *Ettehadieh* are inoperable and against the laws of physics and accepted scientific theory. *Ettehadieh* can not be used as a teaching reference for any element of the instant application since it is inoperable.

Furthermore, the failure of *Ettehadieh* to teach how to construct and maintain the configuration of magnets **14** is yet another indication that *Ettehadieh* is inoperable. For example, in Figures 6, 7 and 8, *Ettehadieh* does not show the restraining mechanism that would be necessary to hold magnets **14** in contact and overcome the forces of repulsion that would push the magnets apart as described *supra*. In other words, Figures 6, 7 and 8 are inoperable. Figure 3 of Ettehadieh shows magnets **14** in a housing, but there is no teaching of how the magnets were forced into the housing or the level of structural integrity that would be needed to maintain the unstable configuration shown.

Ettehadieh teaches that magnets **14** create a field akin to the field shown on page 2 of Appendix B and the manipulation of this field is the basis of his invention. However magnets **14** would not form the organized fields shown by *Ettehadieh* due to the repulsion of like poles. Page 3 of Appendix B shows field lines for one pair of magnets, having only one set of poles in opposition (north in this case). Even with only one pair of poles in opposition on page 3, the field lines on pages 1 and 3 are completely dissimilar. Applicant asserts that the anticipated magnetic flux lines that would result from the configuration shown in Figures 6, 7 and 8 of *Ettehadieh* would be entirely different than that shown in those figures since the repulsion of like

poles would not allow the configuration depicted. Opposing both poles of the magnets shown on page 3 and then adding a second pair of similarly configured magnets, as is the case for magnets **14**, would only exacerbate the difference. "When the reference relied on expressly anticipates or makes obvious all of the elements of the claimed invention, the reference is presumed to be operable. Once such a reference is found, the burden is on applicant to provide facts rebutting the presumption of operability." *In re Sasse*, 629 F.2d 675, 207 USPQ 107 (CCPA 1980). Applicant has clearly demonstrated that the arrangement of Ettehadieh is not operable.

Ettehadieh is contrary to sound scientific principle

As shown *supra*, Ettehadieh's configuration for magnets **14** flies in the face of sound scientific principle. That is, it is contrary to sound principles in the field of magnetism to attempt to form a plurality of separate magnets into a configuration in which like poles are touching.

"The rationale to support a rejection under 35 U.S.C. 103 may rely on logic and sound scientific principle." *In re Soli*, 317 F.2d 941, 137 USPQ 797 (CCPA 1963). Applicant has clearly demonstrated that the arrangement of Ettehadieh is illogical and contrary to sound scientific principles regarding magnetism.

Regarding the second requirement, there can be no expectation of success, since as shown *supra*, Ettehadieh's arrangement is inoperable and contrary to scientific principle.

Ettehadieh cannot be used to teach, suggest, or motivate a ferrous metal plate

Amended Claim 1 recites: "at least one ferrous metal plate disposed on an upper side of said magnet;" Applicant has shown *supra* that *Ettehadieh* fails to teach, suggest, or motivate the at least one ferrous metal plate recited in Claim 1. Applicant also has shown that *Ettehadieh* is inoperable and contrary to logic and sound scientific principle, and therefore, even if a ferrous metal plate was taught, suggested or motivated by *Ettehadieh* it cannot be used as a reference in an obviousness rejection. Therefore, *Ettehadieh* cannot be used to supply any teachings regarding a ferrous metal plate on a single magnet or multiple magnets.

For all the reasons stated above, the combination of *Ettehadieh* and *Melendrez* does not teach, suggest, or motivate all the elements of Claim 1, in particular, the ferrous metal plate.

Therefore, Claim 1 is patentable over *Melendrez* in view of *Ettehadieh*. Claims 2-13, 18 and 19, dependent from Claim 1, enjoy the same distinction over the cited references.

Claim 14

Amended Claim 14 recites: "...at least one ferrous metal plate disposed near an upper side of the second magnet..." This is similar to the limitation recited in Claim 1. The Examiner applied the same rationale to Claims 1 and 14. Furthermore, Claim 14 recites two magnets stacked on top of each other with the north and south poles aligned to concentrate the magnetic flux. The ferrous metal plate placed on top of the magnet stack further focuses and concentrates the magnetic flux. This device recited in Claim 14 produces greater magnetic gauss strength for larger engines. The magnet configuration taught by *Ettehadieh* is a completely different arrangement which can not focus the magnetic gauss as well as the arrangement recited in Claim 14. See the arguments above regarding Claim 1.

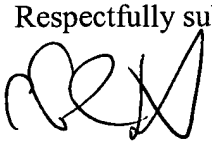
Applicant has shown that Claim 1 is patentable over *Melendrez* in view of *Ettehadieh*. Therefore, Claim 14 also is patentable over *Melendrez* in view of *Ettehadieh*. Claims 15-17, dependent from Claim 14, enjoy the same distinction with respect to the cited references.

Applicant courteously requests that the rejection be removed.

Conclusion

Applicant respectfully submits that all pending claims are now in condition for allowance, which action is courteously requested.

Respectfully submitted,

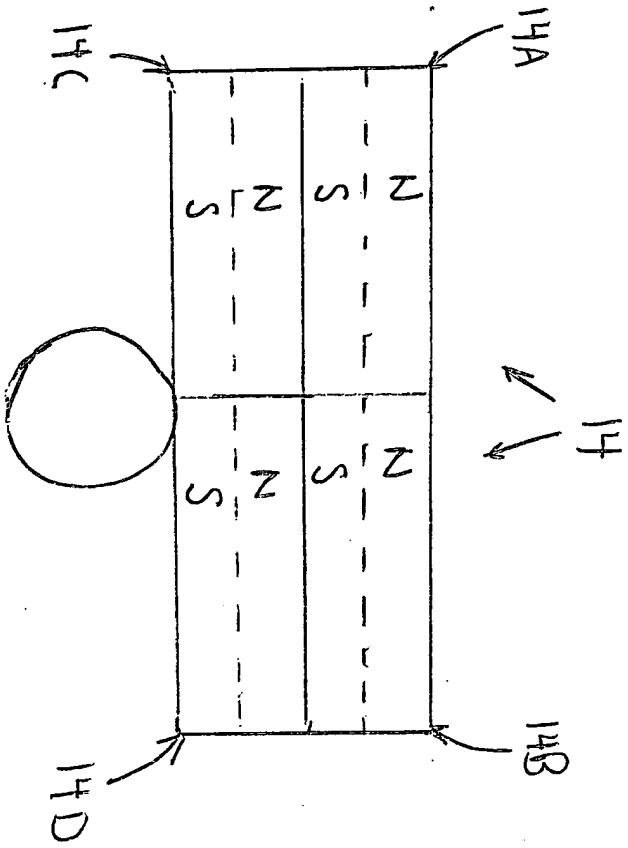


C. Paul Maliszewski
Registration No. 51,990
Simpson & Simpson, PLLC
5555 Main Street
Williamsville, NY 14221-5406
Telephone No. 716-626-1564

CPM/TGM
Dated: May 19, 2006

Appendix

Appendix A



Explanation of magnetism to succeed in Physical Science. Also refer to physics, force, distance, magnetic field, electric charge, electron, magnet, ferromagnetism, iron, cobalt, nickel, Lorentz, attraction, repulsion, Ron Kurtus, School for Champions.

Magnetism

by Ron Kurtus (revised 24 November 2004)

Magnetism is a force that acts at a distance and is caused by a magnetic field. This force strongly attracts ferromagnetic materials such as iron, nickel and cobalt. In magnets, the magnetic force strongly attracts an opposite pole of another magnet and repels a like pole. The magnetic field is both similar and different than an electric field.

Questions you may have include:

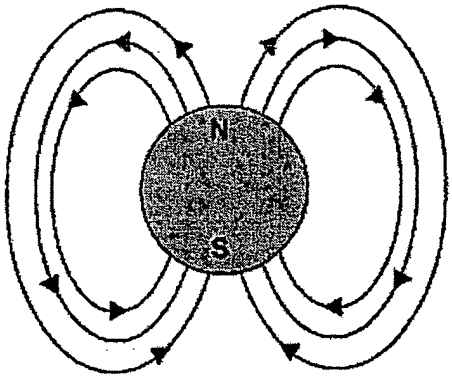
- What is a magnetic field?
- What is a magnetic force?
- How do magnetic and electric fields compare?

This lesson will answer those questions. There is a mini-quiz near the end of this lesson.

Magnetic field

A magnetic field consists of imaginary lines of flux coming from moving or spinning electrically charged particles. Examples include the spin of a proton and the motion of electrons through a wire in an electric circuit.

What a magnetic field actually consists of is somewhat of a mystery, but we do know it is a special property of space.



Magnetic field or lines of flux of a moving charged particle

Names of poles

Magnets

Although individual particles such as electrons can have magnetic fields, larger objects such as a piece of iron can also have a magnetic field, as a sum of the fields of its particles. If a larger object exhibits a sufficiently great magnetic field, it is called a magnet.

(See *Magnets* for more information.)

Magnetic force

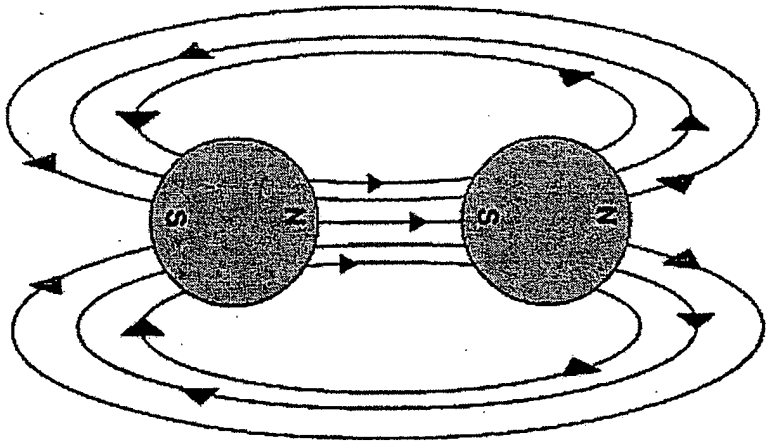
The magnetic field of an object can create a magnetic force on other objects with magnetic fields. That force is what we call magnetism.

When a magnetic field is applied to a moving electric charge, such as a moving proton or the electrical current in a wire, the force on the charge is called a Lorentz force.

(See *Magnetism and the Lorentz Force* for more information.)

Attraction

When two magnets or magnetic objects are close to each other, there is a force that attracts the poles together.



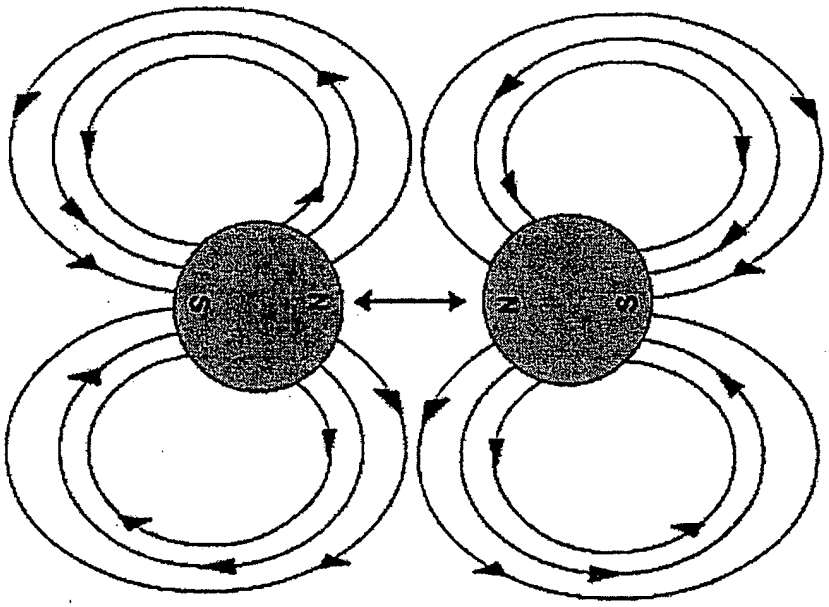
Force attracts N to S

Magnets also strongly attract ferromagnetic materials such as iron, nickel and cobalt.

(See *Magnetic Materials* for more information.)

Repulsion

When two magnetic objects have like poles facing each other, the magnetic force pushes them apart.



Force pushes magnetic objects apart

Magnets can also weakly repel diamagnetic materials. (See *Magnetic Materials* for more information.)

Magnetic and electric fields

The magnetic and electric fields are both similar and different. They are also inter-related.

Electric charges and magnetism similar

Just as the positive (+) and negative (-) electrical charges attract each other, the N and S poles of a magnet attract each other.

In electricity like charges repel, and in magnetism like poles repel.

Electric charges and magnetism different

The magnetic field is a dipole field. That means that every magnet must have two poles.

On the other hand, a positive (+) or negative (-) electrical charge can stand alone. Electrical charges are called monopoles, since they can exist without the opposite charge.

Appendix C